Laboratory scientist discusses Integrative Biosurveillance at Bio Symposium

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Los Alamos National Laboratory research used in National Biosurveillance Strategy

LOS ALAMOS, N.M., May 30, 2014—Harshini Mukundan, of Los Alamos National Laboratory's Physical Chemistry and Applied Spectroscopy group, will talk about her team's innovative research on integrative biosurveillance at the third annual Biosurveillance Symposium sponsored by Oak Ridge National Laboratory June 12 in Baltimore.

Biosurveillance requires the integration of complex data from a variety of sources. Mukundan, along with Ben McMahon, of the Laboratory's Theoretical Biology and Biophysics group, co-principal investigators of Los Alamos' Integrative Biosurveillance project, has been conducting research for nearly nine months using data from Siaya, a small town in Kenya. This data is collected by a team of researchers led by Dr. Douglas J. Perkins, director of the Center for Global Health at the University of New Mexico.

"Changing climate and demographics are creating dangerous virulent and drug-resistant pathogens in particular regions of the earth," McMahon said. "Improvements in diagnostic technologies and epidemiological modeling have now made it feasible to systematically characterize these regions."

At the symposium, Mukundan will describe some of the technological tools that have improved diagnostics as well as the techniques used to interpret this data. She will also present diagnostic measurements performed on clinical samples collected from pediatric patients in Kenya.

Mukundan explained that data collected from a human population allows researchers to discover disease signatures earlier and measure active infection, disease prevalence and drug resistance. The data also will allow researchers to develop epidemiological models to identify and predict disease emergence.

"This project is ambitious in that it aims to develop sensitive diagnostics and a multi-disease epidemiological model directly in a high-burden disease population," Mukundan said.

About the speaker

Mukundan received her bachelor’s degree in microbiology from the University of Delhi in New Delhi, India, her master’s degree in microbiology from Barkatullah University in Bhopal, India, and her doctoral degree in Biomedical Sciences from the University of New Mexico.

She has more than a decade of research experience the field and is the principal investigator on several projects. Her current focus is on the rapid detection of emerging infectious diseases, especially tuberculosis, control of veterinary and agricultural pathogens and bio-threat reduction.

About the symposium

The Biodetection Technologies and Oak Ridge National Laboratory Biosurveillance Symposium will focus on four areas important to the National Strategy of Biosurveillance:

- aberration detection
- risk anticipation
- threat identification and
- characterization and information integration, analysis and sharing.

The National Strategy for Biosurveillance is a coordinated approach that brings together all levels of government, the private sector, nongovernmental organizations and international partners to enhance existing biosurveillance capabilities. The strategy posits that a well-integrated national biosurveillance enterprise can save lives by providing essential information for better decision making at all levels in case of a biological threat.